

NETWORKWORLD

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June 22 - 29, 2009 ■ Volume 26, Number 22

Defense giants enter security war

BY TIM GREENE

As the U.S. government solidifies its cyberdefenses, major government contractors are beefing up their network security expertise so they can get in on the action.

Lockheed, Boeing, Raytheon, SAIC and other big government contractors have been creating their own cybersecurity divisions, hiring network security staff or buying up smaller security firms to augment their own credentials.

PIECE OF SECURITY PIE ANYONE?

Government cybersecurity spending is growing at 6.2% per year to a total of **\$55 billion** over the next six years.

SOURCE: MARKET RESEARCH MEDIA

Market Research Media projects government cybersecurity spending growing at 6.2% per year to a total of \$55 billion over the next six years. Other published estimates put that spending at \$11 billion to \$13 billion in 2013 alone, setting off a rush among providers to bid for their share.

Some defense contractors have extensive network security experience under their belts, Kent says, and others are trying to acquire it. There will likely be projects for both kinds of firms, he says.

Contractors that have worked on classified security projects are familiar with the unique threats that nation states pose to the U.S. government that differ from the kinds of threats that corporations generally face. These contractors have expertise that is a natural fit for protecting the government networks most likely to be targeted, such as those in military and intelligence agencies, he says.

Other segments of the government that are involved in more mundane activities face the same mainstream challenges as corporate America.

It is unlikely that corporations will be soon tapping these government and military contractors for their services or

See Security, page 14

What is a router?

Today's routers perform so many different tasks that traditional definitions no longer apply

BY JIM DUFFY

Is a router still a router even if forwarding packets is just one of its many jobs?

Increasingly more applications, such as firewalls, VPN concentration, voice gateways and video monitoring, are being piled onto routers. Cisco's Integrated Services Router (ISR), for example, even boasts an optional application server blade for running scores of Linux and open source packages.

"A customer came to us inquiring about all the services on a router but they did not need the routing capabilities," says Inbar Lasser-Raab, senior director of network systems at Cisco. "It's becoming a hosting platform for any service linked or tied into the routing capability."

About a fifth of Cisco's nearly \$40 billion annual revenue is attributable to sales of



"I gave up on what my traditional concept of a router was some time ago."

Sam Noble
Senior network systems administrator for New Mexico Courts

enterprise and service provider routers. And the worldwide router market in 2008 was just less than \$13 billion, according to Dell'Oro Group.

But those numbers might become harder to track as the definition of a router changes.

"Whether you call a particular platform or chassis a router depends on what the thing

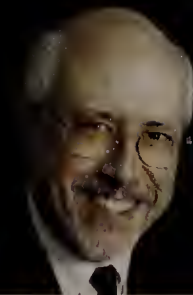
See Router, page 20

NETWORKWORLD WIRELESS LAN SITE SURVEY TOOLS

CLEAR CHOICE



Third-party options include analytical, predictive approaches



■ Focus has shifted from simple WLAN coverage to sophisticated capacity planning. **PAGE 26.**

GO ONLINE for a slideshow of site survey tools. <http://tinyurl.com/kw6rps>
Craig Mathias, Network World Lab Alliance

Network fire drill!

When fire threatened to char Fielding Graduate University recently, the IT staff raced the flames out of town with its network stashed in a cardboard box. **Page 15**



Taking virtualization to the desktop

Desktop virtualization is a different animal than server virtualization, so expect new challenges, IT professionals warn. **Page 16**

IBM goes beyond slapping 'cloud' label on old products

Analysts say mix of public and private cloud services has enterprise appeal. **Page 32**

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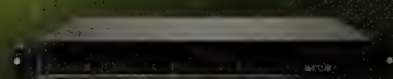
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COOLTOOLS

■ **The Palm Pre challenges the iPhone with its own new features, plus those that iPhone users love. See Cool Tools, page 24.**

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GOODBADUGLY

Mobile getting Big Blue boost

IBM is allocating \$100 million to research in mobile communications over the next five years. The company is investing to create technology in its labs that will bring simple, easy-to-use services to people who no longer use their PCs as the primary way of accessing the Internet, and instead use their mobile devices for managing large forces of enterprise field workers, conducting financial transactions, and for entertainment, shopping, and other activities.

Hello Facebook, goodbye family?

More than a quarter of Americans say they are spending less time with household family members, and the Internet and TV are seen as two main culprits. A survey conducted last year by the Annenberg Center for Digital Future at the University of Southern California shows that 28% of Americans said they spent less time with family members last year vs. 11% in 2006.

The survey does show that 44% of respondents said they were sometimes or often ignored by family members tied up on the Internet and 48% said they got the cold shoulder by family members hypnotized by TV.



Nine Ball strikes 40,000-plus Web sites

More than 40,000 Web sites have been hit by a mass-compromised attack dubbed Nine Ball that injects malware into pages and redirects victims to a site that will then try to download Trojans and keylogger code. According to WebSense, the compromised Web site, loaded with malware, will first try to identify a Web visitor by IP address to discover if it's a repeat visitor. To evade security researchers and investigators who would likely be among any repeat visitors, the Web page will dump a repeat visitor onto the search engine site Ask.com.

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Two views on PC vs. Mac

Re: Apple's Window to gain PC share is narrowing (<http://tinyurl.com/m6g8h5>):

Our company is moving to Linux and Apple computers because we want to get away from the ubiquitous virus, spyware and trojan issues, which plague the predominate Windows platform. Can IT take care of these issues? Of course it can, however, we choose not to afford the high total cost of ownership that presents itself with this platform.

We work in the energy generation and transmission field. Given the threats to security and our country's well being, we'll be seeking any software that isn't Windows based. Certainly developing energy industry software for the Windows platform is easy and it shows with the adoption of it in the energy field. However, purchasing such software does a disservice to the security of our industry.

Certainly developing and using software based on Unix can be more complex and cumbersome, however, security is an overriding issue of paramount importance in the electrical field. I'd encourage anyone working in this field to make a switch because it's common sense to do so.

Czar

Apple never had a chance to begin with even if Vista was a dog. There aren't any large corporations that would be changing over the Macs en masse. The bean counters certainly wouldn't rationalize it and IT would never allow it to happen. IT will never change from Microsoft unless they throw out all the old guard. This is not about productivity, this is about the headaches of change. The infrastructure hates Apple and the change it would bring about. Users want Apple, but that clearly isn't enough. So Apple didn't miss any chance. It never existed. The corporate choice was only between Windows XP and Windows Vista and XP was the easiest decision since no change had to be made at all. In time if Win 7 is just a slight bit better than XP, the upgrades will begin with no thought ever being given to OSX. Apple will never get into the corporate world. You can even see the stiff resistance given to the iPhone.

Constable Odo

Net neutrality: wishful thinking?

Re: The Internet (<http://tinyurl.com/ng7xfd>):

I am for net neutrality, I just do not see how a corporation could be totally neutral. I would expect total neutrality to break down at any congestion point. For example, if I received a VoIP service from my ISP I would expect my ISP to tune their network to optimize that service while non-ISP-provided VoIP service would fall into the "all other traffic" category and fairly be routed with that traffic. If I pay a premium, I expect premium service.

At the same time, neutrality/non-neutrality needs to be regulated. A large ISP could take too much advantage of non-neutrality loopholes. An example would be if Microsoft enters the ISP market with their MS-centric view of Live, the Universe, and everything. Is the MS culture capable of accepting fair competition?

DS1644

Google Apps for the SMB

Re: Google's Outlook Interface a weak nod to corporate reality (<http://tinyurl.com/ll3wgd>):

Google is making a cost-effective product better. IT departments that attempt to keep everything within the firewall are working against the business' best interests. Show me an Exchange admin that gives users a 500MB mail limit and I'll find you a Gmail user in the next cube.

The best answer is to provide the business users with access to services they need that also provides proper governance capabilities (answer: Google apps). Unless an admin can prove a \$50/user/annum TCO for 25GB storage, mobile access, remote access and collaboration (add in database with mapping integration with today's announcement) I support the move to use of Google Apps in any small to midsize business.

Anon

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Smarter technology for a Smarter Planet:

Can the boundaries of a business be defined by its people instead of its walls?

Businesses like nice solid walls, both the physical and the fire variety. But on a smaller, flatter, smarter planet, we increasingly find ourselves working with people far outside those walls: partners, suppliers, customers and remote employees. Instead of protecting, those nice solid walls stand in the way of how people want to work.

IBM is incorporating new tools like social software, wikis, blogs and presence awareness throughout its entire collaboration portfolio to help people in companies reach beyond their walls. The next challenge is to give people the tools they need anytime and anywhere they need them, not when their tech department has time to set them up.

That's why IBM is offering a new way of accessing its collaboration and social networking tools: through the cloud. To the individual, cloud-based tools like LotusLive™ let people work securely with whomever they want to, regardless of what side of the firewall they find themselves on. To the organization, these collaboration tools enhance the productivity of its employees without the cost and complexity of building and managing any additional infrastructure, giving them a seamless extension of their capabilities. And it's all backed by the legendary security that companies expect from IBM. So organizations don't have to tear down their walls to reach beyond them.

A smarter business needs smarter software, systems and services.
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BLOGOSPHERE

■ **Wireless services complaints find confusing path at FCC.** *Network World's* Layer 8 blog notes that the FCC has a lot of work to do when it comes to regulating the burgeoning wireless industry. For example, of the 430,000 informal complaints it got in 2008 from consumers, more than 19,000 were directly related to wireless carriers services. But it is how the FCC handles, or doesn't handle in many cases, those complaints that has overseers more than a little concerned. In a preliminary look at the FCC and the wireless industry, the Government Accountability Office said last week that the FCC has not articulated goals that clearly identify intended outcomes of its efforts to address consumer complaints and lacks measures to demonstrate how well it is achieving intended outcomes. For example, FCC has a goal to "improve customer experience" with its call centers and Web site, through which consumers submit complaints, but lacks measures of customer experience.
<http://tinyurl.com/l6dkug>

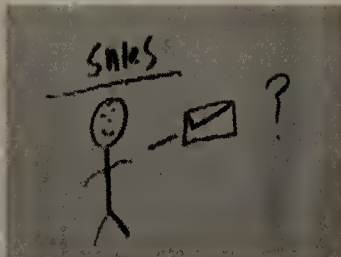
■ **Economy not the reason for scaled-back Cisco Live.** *Network World's* Cisco Subnet reports that the dour economy is not the reason for Cisco excluding non-local press and analysts from Cisco Live in San Francisco later this month. Rather, Cisco just decided to "take a different approach" this year and encourage virtual participation so it can showcase its TelePresence, WebEx and collaboration technologies, a company spokesman said. "We're scaling down in general and encouraging folks to attend virtually," the spokesman said. If virtual "attendance" is truly the future of Cisco Live and other Cisco events, it is unfortunate.
<http://tinyurl.com/l5p47c>

■ **Apple responds to customer complaints over iPhone 3G S upgrade pricing.** Yoni Heisler blogs that hot on the heels of complaints that AT&T was screwing over loyal iPhone users via their upgrade plan for iPhone 3G owners looking to get a new iPhone 3G S comes news that AT&T has caved under the mounting pressure. When AT&T announced their upgrade rates for the new iPhone 3G S, iPhone 3G owners felt slighted. While new AT&T customers and those with expiring contracts were eligible to purchase 16MB and 32MB models of the new iPhone 3G S for \$199 and \$299 respectively, iPhone 3G owners could only upgrade for \$399 or \$499. The explanation behind that was that iPhone 3G owners have only fulfilled one year of their two-year contract with AT&T.
<http://tinyurl.com/mhmuzt>

INTERVIEWS, THE COOLEST TOOLS AND MORE

ITvVIDEO

TECH UPDATE 2.0:



Converting prospects to customers faster

William Borghetti from Sendside discusses how technology can move sales prospects from tire-kickers into paying customers a lot faster.
<http://tinyurl.com/msuuyr>

IDG NEWS WIRE:



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Buzz Aldrin, 40 years after moon walk

Astronaut Buzz Aldrin talked about his walk on the moon and space technology, today and 40 years ago.
<http://tinyurl.com/mbrgbj>

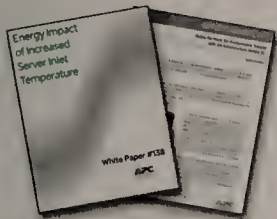
BEST OF NWW'S NEWSLETTERS

Why Is PC/Mac war still raging?

SMB: Macs vs. PCs vs. Linux arguments are dominating two mailing lists I'm on. The vitriol may be slightly less than in the past, but many of the same attitudes exist with subjective arguments trumping logic on both sides. Let's look at three issues in this discussion: who owns the computers, whether software availability forces your decision, and the costs of acquisition and ownership. Technology people in big companies will say, often forcefully, that the "personal" in personal computer denotes a single user, not user control. The computer belongs to the company and the IT department, and the employees are granted its use at the discretion of the company. But the issue is more about control than ownership, because the company owns the computers just like they own the desks on which they sit. This means you have no legal expectation of privacy on a company computer. In fact, your download stupidity can get your entire company in trouble, so they have every right to monitor what you do with your computer. Too many small companies, however, let employees control what's on the computer, and sometimes what type of computer is on that desk. As companies grow, controls tighten.
<http://tinyurl.com/l98gz2>

Wide-area networking: The hyperbole to reality ratio that surrounds cloud computing

is higher than anything seen since ATM. If you remember, industry pundits told us repeatedly that ATM would not only be our next technology, it would be our next and last technology. One distinction between the hype that surrounded ATM a decade or so ago and the hype that currently surrounds cloud computing is that we at least knew what ATM was. Unfortunately, there is very little agreement about what cloud computing is, only that it is the next (and last?) savior for IT. A systemic problem that we see in our industry is that some marketers really believe that IT organizations make decisions based on PowerPoint slides, analyst reports and general hysteria. Having run enterprise networking groups in two Fortune 500 companies, and worked with several others, we can say that in our experience IT organizations make decisions based on facts. Speaking of analyst reports, part of the hyperbole surrounding cloud computing is the sheer size of the projected cloud computing market. We are aware of at least one analyst firm that is claiming that cloud computing will be a \$100 billion market in 2012. Where the hyperbole begins to come in is when vendors use that market projection in an attempt to convince IT organizations that they should migrate to a cloud computing model.
<http://tinyurl.com/m2g49l>



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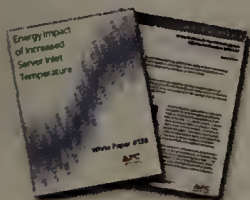
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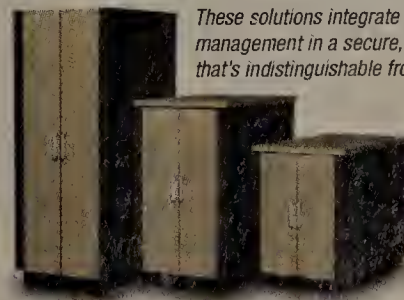
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Google grabs 1 million phone numbers for Google Voice

Google last month reserved 1 million phone numbers with Level 3, signaling that it may finally be ready to roll out its long-anticipated Google Voice service. The free service, announced in March, lets users unify their phone numbers, allowing them to have a single number through Google Voice that rings a call through to all their phones. Google Voice (which is a product of Google's March 2007 acquisition of GrandCentral) has a number of unique features, including call transfer between a user's devices, multi-party conferencing, conversion of voice calls to text messages, cut-rate international calling and call transcription.

<http://tinyurl.com/lmtgg2>

IBM debuts high-performance computing services.

IBM is offering high-performance computing services to customers that want to get supercomputers up and running faster. The services include installation of supercomputers, training and porting of applications to high-performance systems. HPC is useful for universities or companies in sectors such as insurance or oil and gas that do a lot of research, says Charles King, principal analyst at Pund-IT. However, there could be a spike in demand for IBM's HPC services as customers need more processing power to address more sophisticated computing requirements. "IBM's got the experience and brainpower to [address] what will be a maturing demand for this type of service," King says. <http://tinyurl.com/my8nh3>

WLAN market slammed, but 802.11n gains.

The first quarter of this year may have been the gloomiest ever for the wireless LAN market. Overall revenue fell about 11% from a year earlier, the first year-over-year drop recorded by industry analyst firm Dell'Oro. The bright spot was equipment based on the draft IEEE 802.11n standard, the latest and fastest Wi-Fi specification. Revenue from 802.11n gear grew 4% sequentially from the fourth quarter of last year, and for the first time, 802.11n routers made up a majority of the market. Despite the bad news, WLANs are selling better than many other networking products, with revenue declining more slowly than for enterprise wired Ethernet switches, noted Dell'Oro analyst Ben Kwan.

<http://tinyurl.com/ljgqf9>

Dallas Cowboys deck out new stadium with Cisco video technology.

The Dallas Cowboys signed a deal to outfit their brand-new stadium with immersive and interactive video technology from Cisco. The Cowboys will equip their \$1.1 billion stadium with Cisco Connected Sports technologies, including Cisco StadiumVision and IP phones and infrastructure. The technology provides sporting and events facilities with thousands of high-definition video monitors and digital sig-

nage customized for a particular event.

StadiumVision also lets fans interact with the event experience by taping and accessing instant replays on a handheld device and sharing it with other participants, or with anyone on the Internet. "We want fans to have experiences you cannot come close to having at home," said Jerry Jones, owner of the Dallas Cowboys.

<http://tinyurl.com/mv8y57>

Sun cancels 16-core Rock processors.

Sun is said to be canceling its long-awaited Rock project, a 16-core server chip that was expected to be delivered this fall. According to published reports, the five-year project was plagued by delays and various glitches, and was given an unceremonious end at Sun, which is being acquired by Oracle for \$7.4 billion. Rock would have doubled the core count over Sun's fastest processor, the eight-core UltraSparc T2, and been used in high-end servers for data-intensive applications. Just three months ago, Sun executive John Fowler said the Rock processor was on track for delivery in the fall, after suffering a one-year delay. "The processor is in various stages of debug. We're getting close [to release]," Fowler said in March.

<http://tinyurl.com/lou9j3>

Dell diversifies with fixed server offerings.

Dell is working to offer preconfigured systems for enterprise customers looking to get server environments up and running quickly. The fixed configurations include servers, storage modules and software that are pretested and can be deployed in hours. The systems are targeted at customers that may lack expertise in server deployment, or to those who want to quickly deploy servers

with applications such as virtualization. Dell is one of the first server vendors to offer server packages out of the box, says Pund-IT's Charles King. "Dell is recognizing that there are certain application areas where preconfiguration trumps custom systems, specifically in the server space," King says.

<http://tinyurl.com/mdyrdu>

Follow the money: HP tool dissects IT spending.

HP announced software designed to help enterprise IT managers better understand IT spending, and industry watchers say the software could help high-tech decision makers better navigate difficult economic times. The stand-alone HP Financial Planning & Analysis application is designed to aggregate and analyze information from multiple IT, business intelligence and other systems to help enterprise IT managers plan, track and monitor IT spending. "Now is the time for this type of product," says Evelyn Hubbert, senior analyst at Forrester Research. "IT departments are being much more diligent about spending, and this type of technology can help IT plan better and spend smarter."

<http://tinyurl.com/nq9pxn>

Hitachi helps storage shops reclaim capacity.

In the ongoing quest to make more efficient use of storage capacity, Hitachi Data Systems is adding software to its enterprise storage arrays that can find unused space on storage devices and release it.

Hitachi's new technology, called Zero

Page Reclaim, can examine all the capacity on a Hitachi disk array as well as third-party arrays attached to it over a storage-area network. When the software finds unused blocks, it can return them to the pool of usable capacity. Hitachi's software update also includes what the company calls automatic dynamic rebalancing. When a user adds physical disks, this feature automatically rebalances existing virtual volumes across those disks for maximum performance.

<http://tinyurl.com/mm738c>

Broadband adoption, prices increase.

Both broadband adoption and prices have significantly increased over the past year, according to new data. Pew Research found 63% of Americans have broadband Internet connections in their homes, up from 55% last year. In addition, broadband users reported having an average monthly bill of \$39, a 13% increase from the \$34.50 reported in 2008. The increase is striking, as broadband prices had generally been declining since 2004, when users also reported an average monthly bill of \$39.

<http://tinyurl.com/lahmoc>





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It's the Internet, stupid



NET INSIDER
Scott Bradner

Last week I co-signed a response to an FCC Notice of Inquiry on developing a national broadband plan for the United States. The gist of the response is simple: high-speed connectivity should not be the goal, but high-speed

connectivity to what we have come to know as the Internet should be. This sounds like a no-brainer, but that is far from the case.

(The NOI — which had a June 8 deadline for comments — came in response to a requirement buried in the 400-page American Recovery and Reinvestment Act (i.e., the stimulus bill). The bill directs the FCC to deliver a National Broadband Plan to Congress by Feb. 17, 2010, and the FCC wanted to know what people thought should be in such a plan.

The response I co-signed was developed by David Isenberg with help from a bunch of folks including Zipcar co-founder Robin Chase and writer David Weinberger. About 40 Internet-active folks co-signed. One would think that anyone looking at what Congress asked for and knowing anything about history would have assumed that expanding high-speed connectivity to the Internet should be the goal of the national broadband plan. But many of the organizations that bring the Internet to most people in their homes do not see the Internet, as it has been deployed, as all that much of a good thing.

Predictably, the carriers want federal money but no openness rules to go along with it. And it's not just the carriers — some content providers would also like to not have an open Internet — ESPN, for example, is trying to force ISPs to pay for its content.

The economics of the Internet is not an easy topic to understand in the best of times and having the government wave money is not the

best way to create a rational discussion. A rational discussion is just what mathematician Andrew Odlyzko has recently published in a paper titled "Network neutrality, search neutrality, and the never-ending conflict between efficiency and fairness in markets."

Odlyzko covers a lot of ground but one recurring thread is that carriers are unable to properly evaluate the strengths and value of their networks. This inability will undoubtedly color their responses to the NOI.

The response I co-signed urges the FCC to ensure that any federal money be spent to extend the Internet and not to enable new carrier-walled gardens. There is a place for you to sign if you agree.

Disclaimer: Harvard uses the Internet (a lot) but has not expressed an opinion on this NOI, so the support is mine alone.

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.

Security

continued from page 1

new technologies, say John Pironti, the president of network security consulting firm IP Architects.

Pironti says private firms want speed in their security projects — looking to hire consultants, plan the work and execute the plan quickly. In government the process generally takes longer, projects tend to be on the largest scale and one goal is to wind up with systems that can be readily replicated over and over, he says.

"In commercial it's all about efficiency. In government it's about structure and consistency," Pironti says. Large agencies want to build the same defenses everywhere, and simple enough to be run by relatively low-level staff.

One longtime government contractor, Lockheed, has rolled cybersecurity components into its government contracts for years. Securing the data involved in government projects has become a component of each contract, says Eric Cole, Lockheed's chief scientist.

Many of the tools the company uses are the same as the commercially available ones used by corporations. If commercial products don't meet the need, the company will develop its own, but doesn't market them, Cole says.

That's not to say government-developed technologies don't emerge into commercial markets. BBN's Kent cites firewalls, intrusion-detection systems and encryption such as SMIME as being the product of government research.

Sometimes such technologies are kept secret by government but later developed independently by private researchers. The Diffie-Hellman cryptographic key exchange was developed by a British intelligence agency but kept classified even after it was published.

Lockheed doesn't market its security expertise separately, but has seen more government RFPs for data-loss prevention, handling threats and methods of performing penetration testing. "As this area continues to grow, we might move into that," Cole says.

The flip side of this is that sometimes government contractors buy up commercial security firms for their expertise but continue to sell the commercial products. This is the case with Raytheon's purchase of Oakley Systems in 2007, which still sells its SureView network monitoring and forensics software.

The software was developed to discover insider threats in defense networks, says Derek

Smith, president of Raytheon Oakley Systems. "When we joined Raytheon, the idea was to take lessons learned in the defense environment into the critical infrastructure providers in the Fortune 100 and say 'here is military-grade insider-threat technology.'"

Some of the government work falling under the cybersecurity umbrella is for implementing industry standard security measures, Kent says.

Much of the government's cybersecurity work will be implementing industry best practices that might not yet be adopted in government network. It will go a long way toward improving security, but won't require radically new technologies. ■

Defense contractors cyber-up

As dollars on traditional weapons systems tighten, big contractors beef up their cyber expertise. Here are some examples:

Raytheon

- Created a cyber security unit.
- Is hiring 250 information security pros and people who can reverse engineer hardware and software.
- Has acquired three network security vendors.

Boeing

- Acquires eXMeritus, which makes appliances for secure sharing of data.
- Formed Boeing Cyber Solutions.

Lockheed Martin

- Created Center for Cyber Security Innovation

Northrop Grumman

- Hiring cybersecurity intelligence analysts.
- Offers a cyber warrior training course.

SAIC

- Trains Department of Defense in cybersecurity.

University flees fire with network in box

BY JOHN FONTANA

When fire threatened to char Santa Barbara, Calif., last month, the IT staff at Fielding Graduate University literally raced flames out of town with its network stashed in a cardboard box safely resting on the back seat of the get-away car.

While it might sound like a dramatic rescue, it was more the result of a disaster-recovery plan, a newly virtualized network and a quick-acting network operations team.

And not wanting to settle just for an escape, the team got operations up and running in a day at an off-site location where they kept the online university functioning through a nine-day ordeal.

"We joked that it was our network-in-a-box, but that is the power of virtualization and a blade environment," says Deby DeWeese, director of network services for the university.

For Fielding, the network is the university as graduate students and faculty collaborate over the Internet. The school just months prior to the fire had completed consolidating 30 servers running its Windows network onto a virtualized network based on Microsoft's Hyper-V technology and four HP ProLiant BL460c blades that included an HP MSA 1500cs storage-area network. In all, the network and a data-protection system housed 2.4TB of data.

The network-in-a-box version was born May 5, the day the Jesusita Fire broke out.

DeWeese's boss — Dan Sewell, associate provost for research and chief learning officer — returned to the data center that night when the flames came closer to the city. Over the phone from her rural Santa Barbara County home, DeWeese walked Sewell through pulling the blades and unhooking the school's servers and disk array and Microsoft Data Protection Manager (DPM) system.

The next day they returned, plugged everything back in and started to work.

But the fire continued to rage and by that afternoon Fielding's operations center was a block from the fire's evacuation zone.

"We could see flames from our office windows and ash was falling from the sky," DeWeese says. "We couldn't keep doing network-in-a-box, we needed to get something up and running somewhere else."

DeWeese and Sewell again did the network-in-a-box drill, while human resources made sure staff was safe.

And what happened next was a combination of some nimble negotiating and finding friends in the right places that resulted in the university returning online from a new location in about 25 hours.

DeWeese managed the communications

from her home, where the only Internet access is via satellite and where she still had reliable phone lines. She even helped displaced colleagues find hotel rooms around Santa Barbara. Sewell kept communication open with school leadership for decision making.

Ironically, the day the school got back online was the same day it had a scheduled data dump that would have backed up all the university's data to a site in Las Vegas run by provider SBWH, which has roots in Santa Barbara.

That was now on hold, but DeWeese called SBWH, the school's disaster-recovery vendor, and it offered engineer Paul Fisher to help clear rack space the company rents 10 miles from Santa Barbara with Tw Telecom, which just happens to be the provider of Internet lines for the university and of infrastructure for emergency services such as firefighting.

SBWH did some redistribution of its own network hardware to create a chassis to house the blades, the disk array and DPM platform were plugged in, and the network was now safely running miles from the threat of flames that would escape containment for another seven days while consuming 8,733 acres.

E-mail was the first thing brought back online by Niv Dolgin, the director of IT services for SADA Systems, the school's remote e-mail management provider.

But a snag came when DeWeese discovered that Fielding's disaster-recovery plan neglected to account for changes to IP addresses and DNS updates after the move to a new location.

"That is one of the things we would have found out in the move to Vegas," DeWeese says.

The IP addresses were key for connections to the school's online library, a collection of about 1,000 databases subscribed to by the university.

Alain Dussert, the school's director of library services, led the effort to contact the database vendors so they could enter new IP addresses on their end.

"That is what took the longest to set up. Otherwise, we would have been up in an hour," DeWeese says.

The disaster recovery also included redirecting phone lines. DeWeese found a VoIP line to use with CIO Solutions, the school's virtual network administrator. CIO Senior Engineer David Ashamalla helped handle that and a majority of the move's technical work.

The phone provided a recorded message for staff and students. In addition, the school's provost used her Facebook profile to do updates, and help desk requests were routed past the help desk system and straight to the coordinator's personal in-box. ■

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Weighing desktop virtualization

It's 'a very different beast' than server virtualization

BY DENISE DUBIE

Successful server virtualization deployments lead many IT managers to believe desktop virtualization would provide the same benefits. While that is partly true, companies need to be aware of how the two technologies differ, industry experts caution.

"Desktop virtualization is a very different beast and should not be treated as simple enhancements to the server strategy," says Natalie Lambert, principal analyst at Forrester Research. "The drivers are entirely different and the environment will present new challenges to those experienced with server virtualization."

For instance, desktop virtualization doesn't offer the near-immediate cost benefits many cite with virtual server rollouts. And while virtual servers present new security and management challenges, many argue that in the desktop realm, virtualization improves security and manageability for IT departments. In addition, the sheer numbers involved can be strikingly different.

"IT managers could be taking on 500 virtual servers, and that is a lot, but it is nothing compared to 10,000 desktops," Lambert says.

According to industry experts and IT pros, there are some similarities and many differences between virtual servers and virtual desktops. Here we highlight key factors that could help avoid major headaches when moving virtualization to the desktop.

Complexity intensified

Most IT departments at enterprise companies have exponentially more desktops to support than servers, virtual or otherwise. The sheer volume of desktops should be one of the first criteria IT managers consider when making a move to a virtual platform.

With more than 1 billion PCs in the world, there's a huge opportunity for virtualization, but "all the requirements of the PC world need to be maintained as you migrate into the data center," says Mark Margevicius, vice president and research director at Gartner. "The desktop realm represents a lot more moving parts, considering all the uniqueness that happens on a PC needs to be maintained."

Server virtualization teams are unlikely to be responsible for the desktop infrastructure, beyond the servers that host the virtualization platforms. That means desktop teams need to rethink patch management, software distribution and other functions when applying

ing them to a centralized system rather than a slew of disparate desktops.

"Desktop teams know how to manage 100,000 machines so the practices and policies are completely different. In the virtual realm the desktops come back to the server environment but cannot be thought of in the same terms," Forrester's Lambert says.

For Jake Seitz, expanding his company's VMware server virtualization deployment to include desktops was driven by compliance requirements and a move away from supporting desktop hardware. The enterprise architect at The First American Corp. in Santa Ana, Calif., says his group may be supporting

somewhat less immediate and difficult-to-quantify return on the substantial investment.

Analysts estimate choosing virtual desktops can cost 150% to 250% more than traditional PCs — and that's just for the direct cost of acquiring the technology. Savvy IT managers realize when pricing out a project they need to also calculate indirect costs.

"Desktop virtualization is a lot like hybrid cars. No one disputes the value and they love the idea, but it is just too expensive to write a check and pay a lot when the traditional version is cheaper and already paid for," Gartner's Margevicius says.

Yet for some organizations the benefits are enough to warrant the investment. For Kevin Nolan, the potential cost, time and labor savings associated with virtual desktops is driving his organization to evaluate the technology. Nolan, manager of systems engineering at Mohawk Industries in Calhoun, Ga., says his company is expand-



"The desktop has its own challenges, including the uniqueness of images personalized by end users. With a 'patch once and push many' approach, the risk of breaking software goes up exponentially."

Jake Seitz

enterprise architect at The First American Corp.

less desktop hardware, but now they are responsible for maintaining "all these unique virtual machines." With 22,000 desktops, Seitz says the plan is to migrate 3,000 to 4,000 per year as hardware comes off its lease or as it fails — a plan that will help his team stay on top of the new virtual environment as well.

"The desktop has its own challenges, including the uniqueness of images personalized by end users. With a 'patch once and push many' approach, the risk of breaking software goes up exponentially," Seitz says. "We have one-off machines in legal or finance, for instance, and we patch them ad hoc as needed. We realize we can't do desktops in a big bang move; it has to be an incremental move."

Double the cost, half the ROI

While server virtualization virtually guarantees a speedy ROI, desktop virtualization can be cost-prohibitive to start and deliver a

ing its use of virtualization technology beyond the 500 VMware virtual servers his group supports. Nolan, who will be speaking at this month's Network World IT Roadmap Atlanta event, says adopting virtual desktops would enable his company to extend the refresh cycle on PCs.

"If you have a virtual desktop, you can stretch hardware for more like five or six years, rather than the standard three-year PC refresh cycle," Nolan says. "With a lot less hardware, there are a lot fewer opportunities to break and have to fix machines."

Considering the cost, Nolan says his desktop and server team are working together to evaluate several vendors, including VMware and Citrix.

Nolan realizes the desktop realm requires expertise in managing multiple PCs, which Citrix has mastered, but because the technology will reside in the data center and

See Virtualization, page 32

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is primarily used for," says Jeff Doyle, president of consultancy Jeff Doyle and Associates. "Media gateways, firewalls, GGSNs, etc. They might all have router functions in them, but they are generally called by whatever their primary role in the network is."

In many respects routing has become a more general purpose utility on a hardware platform not exclusively optimized for routing. The routing aspect becomes back-of-mind as the capabilities of the device's other applications are of more immediate need.

"As the hardware has evolved ... it's similar to the hardware that's used for servers," says Eric Wolford, senior vice president, marketing and business development at Riverbed Technology, which makes WAN optimizers. "The software becomes a bigger and more important part of deciding what it is. Routing is the software logic that does the connecting of the dots. Routing can be done on a variety of hardware platforms."

Vyatta, for example, runs Linux-based routing code on x86 hardware. It also runs several other open source network applications on the standard hardware, including firewall, VPN concentration, virtualization, address management, traffic management and intrusion prevention that scales from the branch office to the service provider edge.

"In the old days, vendors developed a new box around a new function; we're now seeing a move to bring all of these functions together," says Dave Roberts, vice president of strategy and marketing at Vyatta. "It doesn't make sense every place in the network to plop down three different boxes, or four or five and daisy chain them all together. It makes sense to still have all these functions but as pieces of a larger system that plays in different places in the network — more of a general purpose device that supports a lot of functionality."

Vyatta customer New Mexico Courts says the more features that are added to a router, the more the software component of routing is distinguished from the hardware. Time was when router hardware — specialized ASICs and packet processors — was intrinsic to the function itself.

"I gave up on what my traditional concept of a router was some time ago," says Sam Noble, senior network systems administrator for New Mexico Courts. "It's an obvious location to add additional services. But it does change the focus of the device. What it highlights is how much of a router is software, not as much a hardware platform as we tend to traditionally think of it."

Some, however, still feel if that general purpose device routes, it should be called a router despite the number of additional tasks it performs that push routing to the background. As long as it is forwarding packets based on Layer 3 source and destination information — despite whatever else it does — it's still a router, says Cisco Certified Design Expert Mike Morris, a communications engineering manager at a \$3 billion high-tech company.

"It's still a router, but the definition of 'router' is changing," Morris says. "We think of routers at Layer 3 moving packets in and out of interfaces after altering the data slightly. A lot of the extra features added to routers these days do the very same thing, but at different layers: [session border controllers] operate at Layer 5, application acceleration is Layer 4 and Layer 7, firewall can be at many layers. But all still deal with moving data in one interface and moving it out another after altering the data."

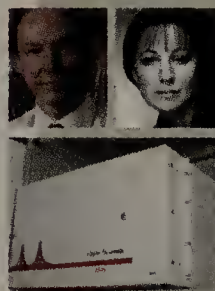
Juniper agrees. It recently enhanced its service provider routers to enable network operators to perform application-layer, real-time MPEG video stream quality monitoring to improve performance and scale.

This capability or any other layered on top of the company's M- or MX-series platforms does not make them any less of a router though, according to Juniper.

A short history of the router

The first router

BBN developed the Interface Message Processor for the ARPAnet, the Internet's predecessor, in the late 1960s. The IMP could support 50Kbps links between nodes.



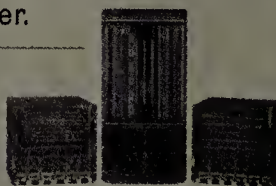
The birth of Cisco

Stanford University's Len Bosack and Sandy Lerner founded Cisco after customizing and commercializing Bill Yeager's multiprotocol router. The AGS — for

Advanced Gateway Server — shipped in 1986 as Cisco's first commercial multiprotocol router.

Here's a switch

Layer 3 switches, such as Extreme Networks' purple offerings that debuted in the mid-to-late 1990s, became a lower cost, higher speed alternative to routers in the core of enterprise IP networks.



More than a router

Newer devices, such as Vyatta's appliance based on open source Linux on x86 hardware, offer support for a slew of security, voice and other applications in addition to routing.



"Maybe the capabilities of a router have evolved and enhanced over time but I still consider the core functions, the heart of a router, to be unchanged," says Rami Rahim, vice president of product management for Juniper's Edge and Aggregation business unit. "As long as the introduction of these advanced services, like MPEG-level video monitoring, don't compromise our ability to also scale the router in its more traditional Layer 3 routing function, then it's still a router. It's just a router that's enhanced with advanced services. Our customers buy routers; whether they add functionality or not doesn't make it any less of a router."

The key, Rahim says, is the "architectural integrity" of the platform that the routing and advanced services functionality runs on. To Juniper, this means separating the packet processing of a router cleanly and distinctly into forwarding, control and services planes.

Without this separation, "innovation" on one plane — such as MPEG video monitoring on the services or control plane — could compromise performance of another plane, such as forwarding, he says.

Still, anything that manipulates packets beyond Layer 3 should be called something else — like a gateway, according to Paul Congdon, CTO at HP ProCurve.

"A router is Layer 3, a switch/bridge is Layer 2, and a gateway anything above that," Congdon says. "Gateway is probably the more accurate term these days, when you look at all the levels of forwarding that takes place."

HP ProCurve recently unveiled a server blade for its 8200 and 5400 switches that enables users to begin integrating and consolidating switching and application processing. The ProCurve ONE module runs software applications from Microsoft (security and network access), McAfee (Web security, filtering and intrusion-prevention system), and others.

The ProCurve ONE module is intended to open the switch forwarding plane to more network-centric application awareness, Congdon says. HP has no plans to rename its switches gateways, however.

Carrier Qwest is responding to the federal Networx RFP for "service-enabling devices" with routers. It's not a term Qwest disagrees with, and the routers they're providing are not much more sophisticated than the DSL modem in Product Management Vice President Eric Bozich's home.

Bozich says "there's no magic anymore" to routing — the functionality of being a traffic cop and moving packets from one interface to another and making those kinds of decisions at wire speed. But it's still essential if not sexy anymore — a DSL modem with 100 features on it still has to route.

So where is all of this heading? Cisco's Lasser-Raab believes the trend of hosting more applications on a router will change the complexion of the device — but not the name.

"We already have the ISR name; but it's an integrated services platform," she says. "A router is still the device that sits between the WAN and the LAN. I do associate that with routing more than anything." ■

Enabling video surveillance

BY NIK GAGVANI

Over the past decade video surveillance has migrated from analog closed circuit television systems with point-to-point connections to modern digital systems that run on IP networks. Enterprise video surveillance systems can scale to hundreds or thousands of cameras spread across geographically dispersed facilities, but this presents bandwidth, processing and storage challenges. The cost to deploy and maintain such systems over their lifetime can be staggering, but new video analytics technology offers a compelling alternative.

Video analytics is the automated analysis of video content for user-defined events of interest. The technology is primarily used for physical security and business intelligence applications. Capabilities range from simple motion detection to sophisticated algorithms for detection of people, vehicles, objects and their behaviors or interactions. The best techniques ignore normal scene changes in a camera view and motion due to snow and rain.

Examples of physical security applications include perimeter breach, loitering or removal of an object, while business intelligence applications include measurement of customer traffic and analysis of customer behavior. However, video analytics does more than optimize safety and security and enable better business decisions — it also reduces the total cost of IP video surveillance system ownership.

The major elements of an IP video surveillance system are cameras, recorders, servers and software. Cameras are distributed across monitored locations, while recorders and servers are typically centralized for ease of management. A video management system (VMS) provides unified access to live and recorded video and aggregates hardware from multiple vendors.

New cameras employ MPEG-4 and H.264 compression to provide DVD or HD-resolution video at bit rates between 1M and 12Mbps. It is desirable to consolidate recorders and servers centrally for ease of configuration and maintenance. This video can then be distributed to one or more security/network operations centers and streamed on demand to responders and emergency personnel in the field.

A VMS is employed to provide recording, streaming, switching and multiplexing functionality. It can normalize streaming video from multiple sources into a common format as well as provide recording and playback services. It also functions as a video server by relaying video to multiple endpoints, each with different resolution and bit rate requirements.

VMS functionality increasingly runs as soft-

ware on enterprise servers instead of on custom embedded hardware. A single server can handle the recording and streaming tasks for 64 or more cameras, with video stored on internal drives or on a storage-area network. Management software typically combines a database server and a Web server, which enables configuration and monitoring over the network and notification to mobile endpoints.

A midsize to large deployment can involve hundreds if not thousands of cameras distributed over tens or hundreds of locations. Most security policies require video to be stored for a week to a month, and some require it to be archived for a year or longer. The operational and maintenance costs over the lifetime of such a system can easily exceed the upfront capital expenditure.

For illustrative purposes, let's examine a 1,000-camera system spread over 10 sites streaming at 4Mbps per camera. If recording is done locally at each facility, it consumes 400Mbps on the LAN and 4.3TB of storage per day per site. With a one-month retention policy, over a petabyte of storage is needed for all sites. It is also likely that monitoring operations are centralized in a security/network operations center, which requires video to be streamed to a remote site with dedicated WAN links at hundreds of megabits.

Given these challenges, enterprises are forced to compromise a great deal. One option is to limit surveillance to forensic evidence. An other option is to drop the resolution for video streamed over a WAN, which makes it difficult to detect security violations. In short, the massive investment in security infrastructure pays poor dividends because incidents cannot be detected and intercepted as they are happening.

Video analytics addresses infrastructure challenges by enabling content-aware storage and routing. The software is the equivalent of having a tireless, unblinking person watch each camera, detect relevant events, and make decisions on what events to store and when to

stream video. An analytics-enabled VMS addresses the three big scalability challenges of enterprise video deployments — human resources, storage and bandwidth — more effectively and cost-efficiently than a system without this capability.

Analytics serve as a force multiplier, freeing personnel from continuous monitoring and eliminating the need to hire additional staff even as the number of cameras grows. The software reduces storage requirements by a factor of 100 by recording video only when events of interest occur. It also reduces bandwidth requirements by a similar factor by streaming video only to endpoints that have subscribed to those events.

Most surveillance video is either monitoring normal, routine activities such as people entering and leaving a parking lot, or no activity, such as around a remote fence line. Simple motion detection is sometimes used to reduce the amount of video recorded or streamed, but it is prone to false alarms and creates unwanted events. Advanced video analytics can be configured to look for a person loitering in a parking lot or crossing over a fence, and only record and stream video when that happens. The technology can also alert personnel to loss of video or tampering. Furthermore, it can create an index of events and store them in a database for future mining.

Video analytics software is best integrated with the VMS at each site. It intercepts the video feed from all cameras and then analyzes live video in real time with minimal latency. Events are stored in a database and posted to one or more alert consoles that have subscribed to those events. Video corresponding to those events is also streamed to these consoles. In effect, video analytics serves as a traffic cop, interacting closely with the VMS. In most cases, an analytics-enabled VMS can be deployed on existing infrastructure with minimal changes.

Video analytics enables security personnel to prevent crime instead of investigating it after the incident, and by allowing IT staff to provide cost-effective solutions to deploy and maintain. It greatly reduces the operational expense of a distributed video surveillance solution while allowing centralized administration and monitoring.

Gagvani is CTO and vice president of engineering at Cernium.

This vendor-written tech primer has been edited by Network World to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

SPRINT SIP TRUNKING:

THE SECRET TO SIMPLE, COST-EFFECTIVE UC DEPLOYMENTS

Most businesses can benefit from unified communications (UC), but too many aren't realizing its full potential because they fail to develop a comprehensive strategy and implement the technology within a sound network foundation.

When properly deployed, UC is a natural in this era of "do more with less." The technology can help trim IT costs by consolidating voice, data and video services on a common network infrastructure. UC also helps improve worker productivity, with features such as presence technology, unified messaging and personalized call routing that make it easier to connect with colleagues and customers.

However, in a February 2009 research report sponsored by Sprint, Yankee Group points out that while many organizations have implemented some aspects of UC, notably VoIP, few have a formal UC program in place. To be successful, IT must keep in mind two main points:

- ▶ Take a holistic approach to the network—not just the LAN, but also the WAN protocols and the "last-mile" link between the local phone system and the wide-area corporate network.
- ▶ Plan for wireless integration prior to deployment, not as an afterthought. "With more and more workers becoming mobile, integration with mobile phones will be one of the keys to a successful deployment," Yankee Group says.

SIP and the Sprint Approach

Sprint can help address these underlying network issues, enabling capabilities that deliver a superior UC experience, including support for the Session Initiation Protocol (SIP), for setup and teardown of multimedia calls over the Internet.

Sprint SIP Trunking allows a single SIP trunk to a central location to be shared by many sites across the enterprise, eliminating the need for PSTN links at each branch site. Instead, SIP sets up calls that are carried over the Sprint Global MPLS VPN—a best-in-class offering in terms of reliability and performance. And SIP eliminates the need for the Internet-to-PSTN gateways that are often required with PBX-based VoIP implementations, enabling SIP-compliant equipment to make calls directly over the Internet.

Sprint SIP Trunking comes with a pool of minutes for "off-net" calls that can be shared by any site on the network, so there's no need to buy capacity to cover peak times at each site. Additionally, the minutes are tallied on an annual basis, making it ideal for companies with seasonal variations in calling patterns.

Wireless devices can also be incorporated in the UC implementation. Sprint allows seamless call transfer from its CDMA wireless phones to a desk phone and vice versa, along with simultaneous ring of wireless and desk phones. Calls from enterprise users to Sprint wireless phones are carried "on-net," so there are no additional usage charges. Furthermore, call management is extended to the mobile device to ensure proper wireless usage.

For UC customers, it all adds up to significant cost savings. A retailer with thousands of outlets slashed its long-distance costs by 50 percent with Sprint SIP Trunking. Similarly, a nationwide bank eliminated half of the 300 trunks it needed for its various locations by implementing Sprint SIP Trunking and carrying voice over its data network.

Sprint can apply the same expertise to your UC project, along with services including Sprint SIP Trunking. If you need to do more with less, UC enabled by Sprint SIP Trunking can help. ■

SPRINT SAVES MILLIONS FROM UC COMBINED WITH SIP TRUNKING

Benefit	Detail	Amount (per year)
Savings	Elimination of PBX Maintenance	\$1 Million
Savings	Travel Reduction	\$15 Million
Savings	Reduction in Project Completion Time	\$15 Million
Savings	Shortened Sales Cycle	\$5 Million
Savings	Reduced Toll and Conferencing Costs	\$1.8 Million
Savings	Removal of PRI with SIP Trunks	\$6 Million
Improved Productivity*	Individual and Workgroup Improvement Through Collaboration	\$20 Million

*\$20 million is an estimate from Sprint based on process improvement through the removal of human latency

Source: Yankee Group and Sprint, 2009





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GEARHEAD

Mark Gibbs

Building an RSS podcast feed, Part 3

For the last couple of weeks I've been discussing how to create an RSS feed for a podcast. This week I'm going to discuss deployment, but first a friend who read last week's column asked me: "What software do you use for creating the actual podcast audio?"

There's a lot of audio software out there and each application has its own advantages and disadvantages. For example, there's Audacity, a free

cross platform, open source audio package which, while it is excellent in many ways, lacks user interface polish when compared with some of the commercial products. That said, Audacity is very sophisticated and powerful and once you're used to it it does a great job.

I often use Audacity for stereo recording, but for multiple inputs and where you're not mixing the inputs down to stereo with a hardware mixer, you'll need more sophisticated audio input hardware. The problem is that while Audacity is supposed to be able to record as many as 16 channels simultaneously, there's precious little documentation on how to do it. Moreover, users reported that in previous versions of Audacity (the current stable version is 1.2.6) multiple input channels were subject to noise and dropouts because of sampling problems.

If you have to do multitrack recording direct to disk be prepared for a "spendy" experience for both the hardware and the software.

So, let's get back to creating an RSS feed for our podcast. An easy way to do this is with a program called ListGarden.

ListGarden, which is free (though donations are encouraged) and available for OS X (as a Perl script), Linux (also a Perl script) and Windows (as an executable, which is really a Perl script with a built-in Perl runtime), is published by the legendary Dan Bricklin. The program was last updated in 2005, but still does a fine job of creating news feeds.

ListGarden is implemented as a custom Web server that presents a tabbed browser-based interface. This interface provides access to the configuration options where you set up the location of a local copy of the feed's XML file and or the FTP details for uploading the file to a remote server. Other tabs let you set the feed's overall details and the details of individual feed items.

You specify the names, descriptions and locations for each feed item and ListGarden can optionally generate additional human readable HTML files that list and link to the feed items and their content. You can also provide templates to change the look of the generated HTML pages.

The ListGarden system works great and I award it 4 out of 5 (its lack of updates is a problem and it doesn't directly support the tags that must be included to promote a podcast via Apple's iTunes store).

For a more up-to-date tool check out Podcast Generator. This program, written in PHP, is free and open source and is intended to be installed on the server that will host your podcasts. Setup is simple once you've uploaded the installation files to your server and, like ListGarden, everything is done through a Web browser interface.

Podcast Generator is designed to support any media type and allows the creation of mixed audio and video podcasts; its output meets the W3C standards; it includes supports for iTunes specific tags; it provides categorization so that every category features its own podcast feed; it dynamically creates "recent podcasts" and "podcast archive" Web pages; it can be skinned (aka "themed"); it supports Web and FTP upload of content; and the human readable version of the feed provides a built-in streaming mp3 player for audio content.

This is a great tool and I award it a 5 out of 5!

Gibbs is occasionally happy in Ventura, Calif. Lighten his darkroom at gearhead@gibbs.com.



Keith Shaw

COOLTOOLS

Palm Pre: The official Cool Tools review

The scoop: Palm Pre, by Palm (on Sprint network), about \$200 (after rebates, plus data and voice service plans).

What it is: The touchscreen Pre is Palm's latest entrant into the smartphone market, and includes all of the features users would expect from today's smartphones: a compact size, e-mail access (including Exchange), Web browser, multi-

media (music and videos) player, digital camera, embedded GPS and the ability to download new applications directly through an app store. Differences from the iPhone include a physical slide-out QWERTY keyboard, and the ability to keep multiple applications open simultaneously.

Why it's cool: A bit of a disclaimer — I'm a huge fan of the Apple iPhone 3G, both for personal use (iPod player, camera, entertainment apps) as well as business use (e-mail access, social network access, document access, GPS search). Palm has a tough hill to climb to take on Apple, considering that a lot of users who flocked to the iPhone were likely Palm users back in the day. Convincing them to switch back could be a tough chore. Fortunately, the Palm Pre is a good start, as it added features that the iPhone doesn't have, and also retains features that iPhone users love. The Pre comes closer to emulating the iPhone experience with its touchscreen, gestures and application activation methods than any other "iPhone clone" I've tried. The browser, which has brought down many a smartphone, is just as good as the Safari browser on the iPhone. The Pre's digital camera (with auto-focus/flash) is hands-down better

Palm Pre features a slide-out keyboard.

than the iPhone (at least until the 3GS comes out).

Some other little things I enjoyed: The Touchstone magnetic induction-based charging kit (sold separately; it should be bundled with the device) made recharging the Pre simple, and the tiny envelope icon e-mail alert on the bottom of the screen was a nice touch.

Some caveats: I understand why Palm wants a physical keyboard, as many iPhone owners have complained about their on-screen keyboard. As an iPhone user, I'm satisfied with the on-screen keyboard, so I'm not aching for a physical keyboard. The keys are small, making the preferred two-handed ("BlackBerry style") method of typing difficult. It was more comfortable to hold the Pre in my left hand and type with my right index finger. High-volume e-mail users are likely to feel cramped with this keyboard.

Adjusting to some of the new gestures and features took some practice. The system has a weird way of getting users to go back on a page — where the iPhone and other phones use a "back arrow" or button, the Pre makes users do a fingerslide "back gesture" (moving from right to left below the screen).

Will it dethrone the iPhone? If you tell people you like the Pre, they usually say, "Oh, but it's on Sprint" — the only choice for U.S. owners. But reports say Verizon Wireless will offer the Pre in January 2010, so if you can wait that long, you'll have another option. But with a new iPhone (the 3GS) also available, it's unlikely that this version of the Pre will topple the iPhone. But Palm has a good device here, and I'm encouraged to see what other WebOS devices come out in the future.

Grade: ★★★★★ (out of five).

Shaw can be reached at kshaw@nww.com.



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Eight third-party options for coverage, capacity planning

Managers have option of analytical tools, predictive tools or combo products

BY C.J. MATHIAS, NETWORK WORLD LAB ALLIANCE

The pre-installation site survey has long been a core element of wireless LAN deployments. The concept is simple: set up an access point, run a site-survey application on a mobile computer, and walk around while noting signal strength in various locations in order to build a coverage map.

Then use the data to deploy production access points for optimal coverage.

While early deployments were optimized for coverage because of high capital-equipment costs, today's WLAN deployments need to be much more concerned with capacity.

That's because WLANs must support potentially large numbers of users with a diverse application base requiring ever-greater throughput over time. Plus, dramatically larger deployments in more challenging physical layouts and the mission-critical nature of enterprise WLANs add to the complexity.

All enterprise-class WLAN products include some form of site-survey capabilities. However, at least a partial installation of the system to be purchased is required before these can be used. For this reason, and because a wide range of site-survey strategies can be applied, a number of third-party site-survey tools have appeared in the market.

There are four types of site-survey tools: spectral sweep, predictive, analytical and production monitoring. This review focuses on predictive and analytical tools. Predictive tools use sophisticated radio frequency modeling techniques to simulate the performance of a hypothetical WLAN system without having to install any real equipment.

Analytical tools reside on a mobile computer, with real-world readings recorded as the user walks around in an environment where access points are installed and powered on, and often connected to the remainder of the infrastructure.

Keep in mind that these two classes of products cannot be directly

compared against each other. Indeed, in complex environments, the use of both might be desirable. In addition, some of the products tested are hybrids of the two.

Two strategies: Predictive and analytical tools

The general idea behind using a predictive tool is to create (or import via a .dxf file, for example) a floor plan of the area to be deployed, assign properties to objects in the drawing (walls, floors), and then to place access points (in some cases automatically) and simulate the propagation of RF signals through this virtual environment.

Radio-wave propagation is a highly non-linear, essentially statistical phenomenon, but good estimates can be obtained if data values are carefully considered. The best results are obtained by engineers with a detailed background in RF and/or those who have been trained to use a given predictive tool and had sufficient time to experiment with it before using it on a production task.

Analytical tools use real-world measurements to plot RF propagation via a combination of the site-survey tool running on a mobile computer and access points installed in the area to be covered. These can be successfully applied by those with a less-detailed knowledge of RF and with only minimal training and usage experience, although the feature-rich nature of the products we tried may imply a longer learning curve for some.

All of these tools encompass functionality well beyond what has traditionally been the definition of a site survey, incorporating a form of WLAN assurance that aids in verifying configuration, operation, performance, and even detecting rogue access points.

Most Wi-Fi systems vendors also offer planning and survey tools; if you've already picked a vendor, these might be the best place to start, as they will already be optimized for the equipment you'll be using.

Features vary among vendors

Company	Product	Version	List price	Type	Active survey	Passive survey	Throughput testing
AirMagnet	Survey with Planner Module	6.0	\$4,695	P/A	•	•	•
Berkeley Varitronics Systems (BVS)	Swarm	1.5	\$2,500	A		•	
Ekahau	Site Survey Pro	4.5.3	\$3,995	P/A	•	•	
Motorola	LANPlanner	11.0	\$12,000	P/A	•	•	•
Motorola	SiteScanner	2.0.3	\$2,500	A	•	•	•
Nuts About Nets	Airhorn (with external antenna)	2.0.8359.0	\$135	Special			
Psiber	RF3D WiFiPlanner	1.0.21	\$795; \$395 for Lite version (up to 10 apps and 5 floors)	P			
VisiWave	Site Survey	2.0.6	\$549	A	•	•	•

Type: P= Predictive; A=Analytical (see text)

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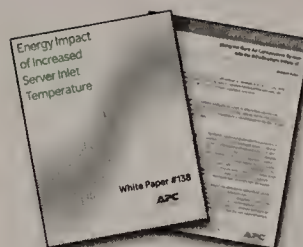
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And while many site-survey tools can produce detailed RF predictions and analysis, enterprise-class Wi-Fi management systems also will set (and change) such parameters as channel assignments and transmit power levels, as, for example, RF conditions or building configuration change.

Thus a post-installation survey will often have more value than a pre-installation planning exercise.

Vendor: AirMagnet
Product: Survey Professional with Planner Module
Verdict: A hybrid powerhouse

AirMagnet's robust site-survey product, Survey (sometimes in the documentation called Surveyor), offers an optional Planner Module that results in a combined predictive/analytical powerhouse.

Survey is capable of performing both passive (the traditional listen-only, walk-around strategy for evaluating signal strength) and active scans, in the latter case actually associating with access points with a subsequent exchange of data — thus simulating client behavior.

Survey Pro even takes this one step further, by providing an (active) lperf Survey, using the well-known lperf benchmarking tool to yield a very robust estimation of performance.

It's possible to merge all results into a comprehensive display of parameters by channel and SSID, down to the level of a single access point, and even in three dimensions. Detailed 802.11n analysis also is included. Unauthorized stations can be detected by Survey, as might be expected given AirMagnet's history as supplier of omnibus WLAN assurance capabilities, along with the evaluation of sensor positioning.

Additional features include integration with AirMagnet's AirWISE knowledge base, voice performance verification, and a very flexible report generator.

And if that weren't enough, integration with AirMagnet's Spectrum analyzer is included. We found this feature particularly useful in evaluating performance under conditions of real-world interference.

GPS support is included for outdoor surveys of campus or metro-area settings, for example, along with integration with Microsoft's MapPoint and Virtual Earth capabilities, and Google Earth as well. Reporting capabilities are excellent, with many options to highlight potential problems detected. There's also a handy calculator for evaluating technical aspects of RF propagation, including link margin, free-space loss and Fresnel zone.

Aimed at professionals, AirMagnet Planner provides a flexible, detailed simulation environment with fine-grained control over key

parameters. The tool has the ability to automatically place access points, although manual overrides will prove quite useful in many production environments. Extensive antenna modeling is included, as is a large library of production antennas.

When integrated with Survey or Survey Pro, it's possible to use real-world data to refine the Planner model over time (or, for example, compare pre- and post-installation scans) via a feature called "Diff View", which pinpoints differences between multiple scans or simulations.

Importing and defining structural properties and performance requirements is easy. It's possible to trade off resolution for time-to-solution (increased resolution requires more compute cycles), and to evaluate results by channel or SSID. The manual for both of these products is excellent.

Note that while they're integrated, these two products are priced separately — \$3,695 for survey, and \$1,000 for the Planner Module, a scaled-down (in terms of features) Express version of Survey, which we did not review, is also available for \$1,995, and a stand-alone version of Planner is available for \$2,000.

Vendor: Berkley Varitronics Systems (BVS)
Product: Swarm
Verdict: Complete, well-integrated set of applications

BVS' Swarm is a set of applications that implement a fairly complete site-survey tool. The first, Projector, imports and scales floor plans, and also places walls, windows, doors and access points, among other radio and passive objects, in the model.

The next piece, Collector, runs on the Yellowjacket handheld PC we reviewed during the spectrum analyzer test. Collector, as its name implies, grabs data for later analysis, and GPS information is recorded for outdoor scans. Specific channels can be selected as desired; fewer results in better performance. Finally, data is crunched by Analyzer, which runs on a Windows-based PC.

Like all of the site-survey tools we reviewed, Analyzer is project-oriented, and floor plans from Projector and the analysis of data from Collector are displayed in one pane while control selections are made in another. Analyzer can provide RSSI for channel, media access control address and SSID, with further consequential coverage analysis and reliability analysis, which is the likelihood of receiving a signal at a particular threshold value. Results can be presented in a tabular report form if desired.

Perhaps the best feature of Swarm is that it is part of an integrated

RF analysis	Performance estimation	Throughput/analysis	Interference analysis	Coverage analysis	Noise/SNR analysis	Differential analysis
•	•	•	•	•	•	•
•			•	•	optional	
•		•	•	•	•	
•	•	•	•	•	•	•
•		•	•	•	•	
	•	•	•	•	•	
•		•	optional	•	optional	

Feature	Definition
Active survey A	Associated with AP/SSID
Passive survey	Obtaining signal strength and other data without association
Throughput testing	Benchmarking over-the-air performance
RF analysis	Evaluating radio signal quality parameters
Performance estimation	Estimate throughput (predictive tools only)
Throughput/data rate	Analysis Prediction and/or analysis of throughput
Interference analysis	Prediction and/or analysis of interference
Coverage analysis	Show estimated coverage by signal strength
Noise/SNR analysis	Show channel noise and signal-to-noise ration analysis
Differential analysis	Ability to compare two different analysis runs or simulations

CLEAR CHOICE TEST WLAN SITE SURVEY TOOLS

hardware/software, indoor/outdoor solution, packaged in a convenient (and small) Windows Mobile device with associated PC analysis software. Installers looking for a pre-integrated solution will find particular appeal here.

Vendor: Ekahau

Product: Wireless Site Survey Professional

Verdict: Strong analytical capabilities

Ekahau is best known for its real-time location and tracking (RTLS) products, but it is also in the site-survey business — in fact, one of the key applications for Ekahau Wireless Site Survey is to assist in planning and deploying an RTLS installation, which requires precise calibration for optimal accuracy.

We tried the Ekahau Wireless Site Survey Professional tool with their optional NIC-300 sensor (a dual-band 802.11n Wi-Fi Cardbus adapter), which is \$145. We ran this application on a tablet PC, and finally found an undeniably good reason to purchase one of these.

Ekahau Wireless Site Survey is both a predictive and analytical tool. It's very easy to set requirements for a given installation in terms of access point signal strength, SNR, throughput and even access point density. Predefined requirements for various classes of service, including voice, are supplied, making it easy to get started. While the placement of simulated access points in the predictive case is supported, the application is more oriented towards analytical, walk-around surveys.

The program can guess at access point locations in this case, and it's easy to correct for any errors in this type of automated access point placement — just drag and drop. Analysis of results is performed graphically, including a verification of whether the network is meeting its specified requirements (called "Network Health").

A Standard version, minus network planning (predictive capabilities), automated reporting and GPS is available at \$1,995. Ekahau also offers a free, scaled-down site-survey tool (which we did not evaluate) called HeatMapper.

Vendor: Motorola

Product: LANPlanner

Verdict: Feature-rich hybrid tool

LANPlanner is a direct descendent of one of the original WLAN predictive tools from RF modeling pioneer Wireless Valley, acquired by Motorola. This is a very robust product, and like all planning tools, perhaps a bit intimidating to non-engineers. Operation, however, is straightforward, and includes both predictive and analytical capabilities.

One begins by importing floor plans for each floor of the building, and then assigning attenuation properties to elements in the model. WLAN equipment can then be placed (especially easy if you're using Motorola gear, as might be expected), with modeling of local radio regulations, antenna customization and placement of sensors (if desired) as well.

Performance requirements (data rate and capacity) by geographic region can be entered. Next, it's time to run the model, with detailed visualizations available for contour (with fast results), grid (which improves performance predictions), instantaneous points (with performance numbers displayed simply by moving the cursor to any point in the model), and automatic and manual (or a combination of the two) access point positioning.

Performance can be easily evaluated via a mouse click at any geographic point in the simulation. Requirements for redundancy or overlap, as well as the needs of specific applications, can also be evaluated.

LANPlanner has the ability to compare predicted vs. actual readings obtained via its analytical site-survey capability, and it can verify network performance, locate rogues, analyze interferers, and evaluate SNR, packet error rates and jitter, the latter being especially important in voice applications.

Technology migrations, for example, from 802.11g to 802.11n can be

What to use when

Deciding which class of tool to use can be a challenge, and unfortunately there is no easy way to simplify this selection. All of the site-survey tools discussed in this review are quite capable of meeting the needs of most WLAN system planners and installers.

In general, we'd recommend a predictive product to professional WLAN planners and installers who have a detailed knowledge of RF technology and possess the same for wireless LANs.

It will take time to build sufficient knowledge and experience to be productive with these sophisticated tools, and as always, the results are going to be a function of the quality of the data entered. Misinterpreting the construction of a given wall, for example, could yield output that will be less than helpful.

Analytical tools, on the other hand, are very easy even for novices to use, and can provide a detailed map of real-world RF propagation across spaces of essentially arbitrary size. But they do involve a significant investment in labor, and at least some experience in practice for best results.

Simple installations (open offices, branch offices, venues with a very small number of access points or low throughput requirements) may not require a site survey at all. But we still suggest that a post-installation survey, possibly on a recurring basis, will likely be desirable as RF conditions vary because of changes in building construction, furniture layout or nearby sources of interference, among other conditions.

There will always be a certain amount of trial-and-error associated with the placement of access points; radio (and, in the case of predictive tools, model-building) is not an exact science, and network demands for throughput, capacity and time-boundedness will change over time.

— CRAIG MATHIAS

modeled, as can data rate optimization. Unique among the products reviewed, RFID devices can be modeled.

Viewing and reporting options are more than plentiful. As might be expected, the product integrates with Motorola's own RFMS WLAN management tool. Overall, LANPlanner is highly customizable, and the documentation is comprehensive and complete.

Vendor: Motorola

Product: SiteScanner

Verdict: Analytical analog to LANPlanner

SiteScanner is a cousin of Motorola's LANPlanner, with a very similar layout and user interface, but designed just for analytical measurement and visualization. Like LANPlanner, however, work begins with importing a drawing of the building in question, and then manually placing access points in the model.

The user then proceeds to gather data by walking around, and it's possible to both grab packets from all access points within range, or to test performance with a single specific access point. Samples correspond to markers set by the user (or automatically over continuous linear runs), with resulting data (SSID, RSSI, channel, SNR and more) displayed tabularly.

Rogue access points can be identified easily, and overall performance (including IP-layer data) evaluated via active scanning and automatically recorded on a server via a "Sitespy" feature. Gathered

See WLAN, page 30

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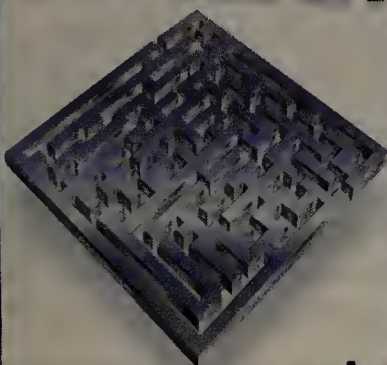
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CLEAR CHOICE TEST WLAN SITE SURVEY TOOLS

WLAN

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data can be visualized in numerous ways, including by channel and SSID, with detailed color heatmaps to evaluate coverage, SNR, cell overlap and more. Expected (anticipated under sampled operating conditions, based on RSSI) connection rates along with measured data rates can also be displayed.

Vendor: Nuts About Nets

Product: AirHORN

Verdict: Signal generator for predictive testing

AirHORN isn't a site survey tool in the sense of the other products reviewed here; rather, it's signal generator packaged as a USB dongle with, in the model we tested, an external antenna.

It can be programmed to output a signal with essentially constant amplitude in a particular 802.11b/g Wi-Fi channel (or scan over a set of channels) for the purpose of providing a known signal source useful in site survey, antenna alignment testing, interference analysis and many other applications.

Thus a notebook computer can be turned into a generator of a stable and accurate wireless signal and used in place of a real access point for placement purposes, or for generating interference to evaluate that condition during site surveys. While it would be nice to see a version of this product with variable power output, so as to simulate a given distance from an access point, this is a clever little product that will be right at home in the toolbox of installers everywhere.

Vendor: Psiber

Product: RF3D WiFiPlanner

Verdict: Covers the basics, low cost

It's easy to import building floor plans in .jpg, .bmp or .png format into RF3D WiFiPlanner, and similarly, it's easy to correct for rotation or skewing and to align floors on top of each other. One then defines the properties of floors and ceilings, supporting (typically, load-bearing) and other walls, places access points in the model, and observes the result of simulated 3D radio-wave propagation.

As antenna orientation can affect the results, this information can also be specified in the model. In addition to modeling field strength (including both power and SNR) and interference, network load and viewing resulting estimated data rates, it's also possible to estimate reliability in the event of access point failure, although automated failover reconfiguration is available in most enterprise-class WLAN system products.

Calculation resolution can be adjusted to match one's available processor performance (or degree of patience), and network load

can be simulated as well. While not as robust as some more expensive competitors, RF3D WiFiPlanner covers the essentials — and a bit more — quite well.

A less-capable Lite version with a 10-access-point limit is also available. Psiber has announced a 2.0 release that will include a number of enhancements, such as support for 802.11n, access points with multiple radios and channel utilization by frequency, along with many others.

Vendor: VisiWave

Product: Site Survey SO

Verdict: Strong 3D features

VisiWave Site Survey lets the user import graphical floor plans of the area under consideration, and to manually place access points in the model. Once you've imported your floor plan into Visiwave Site Survey, you can capture site-survey data point-by-point (manually marking locations, continuously, or via GPS if outdoors). Integration with Google Earth also is provided. Reports are generated via a separate application (VisiWave Site Survey Report), and it's possible to produce detailed tables, graphics and charts. Most useful are the 2D and 3D contour graphs of signal strength, and it's possible to view coverage by access point, channel and data rate.

Visiwave comes in a number of versions. The SO ("software only") version we installed differs from the Pro version (\$2,495) in that the latter includes a hardware navigation unit that automatically tracks the user's location, although both collect sampled data in the same format.

The reporting application is included with both. Bundled versions that include select 2.4GHz models of Metageek's Wi-Spy spectrum analyzer are also available, enabling integrated interference and signal-to-noise calculations. It's also possible with this configuration to capture spectral energy relative to the floor plan for careful analysis of this data. Given the small differential in cost (only about \$250 to \$500, depending upon Wi-Spy model) and the huge range of additional functionality enabled, we'd recommend this option.

A few concluding remarks

We decided not to pick a winner in this review. Anyone contemplating a WLAN installation should carefully evaluate throughput and coverage requirements, as well as perform a RF sweep for interference. If a WLAN system vendor has already been selected, check to see if they have a predictive or analytical tool that will meet your needs.

Be prepared to do a lot of walking (don't forget to scan outside to check for signal leakage) and to invest some time in carefully considering the analyzed results in light of throughput and capacity requirements in addition to coverage. Multiple survey passes may be required for a complete picture. Beyond that, as we discovered here, there are many fine — properly used, anyway — site-survey tools to choose from.

It may take some time to learn to make effective use of a given site-survey product, but the return on investment (most notably in the form of lower operational cost) from doing so is potentially significant.

Mathias is a principal with Farpoint Group, an advisory firm specializing in wireless networking and mobile communications. His blog, Nearpoints, resides at Network World. He can be reached at craig@farpointgroup.com.

How we did it

Products were installed on standard Windows XP-based PCs. As it would be impossible given the scope of this project to evaluate the accuracy of a given predictive tool (which would involve building a model for a reasonably large building and then testing the results via an actual installation), we decided instead to examine key features of each product and assemble a list of features (see Table 1). We actively tested some features of the analytical tools by walking around, using a small number of access points, and again assembling a list of features, also listed in the table.

A few notable players in the site-survey space declined to participate: AirTight Networks' SpectraGuard Planner, Helium Networks' Wireless Recon, Aruba Networks' RF Protect Mobile and Fluke Networks' InterpretAir WLAN Survey.

ONLINE: Slideshow of tools

Watch a slideshow of the eight tools that help IT execs set up and monitor WLANs.

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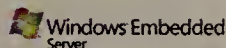
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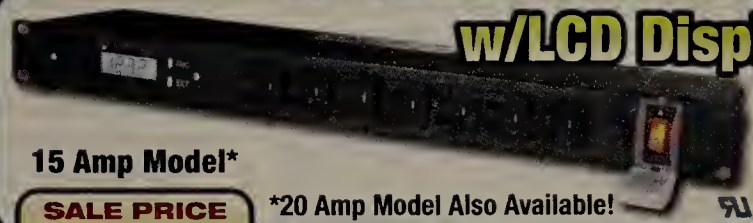
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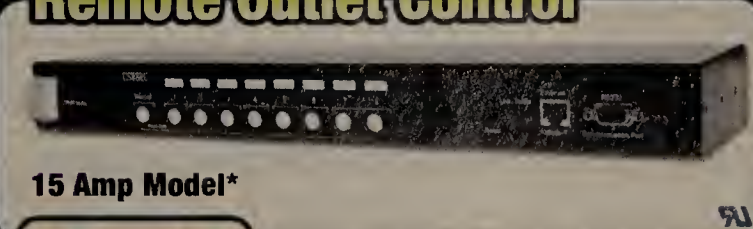
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IBM goes beyond 'cloud' label

BY JON BRODKIN

After some fits and starts, IBM has re-tooled its cloud strategy and come up with a set of offerings that should make both the public and private cloud models more appealing to enterprises, analysts say.

When Big Blue unveiled its "Blue Cloud" initiative about 18 months ago, the company mainly focused on slapping the "cloud" label on a bunch of previously released products, Forrester Research analyst James Staten says.

"When they launched Blue Cloud, we accused them of cloud washing, by taking a bunch of existing stuff and saying 'this is cloud' and 'this is cloud,'" Staten notes.

IBM has since made many cloud-related marketing pushes, but an announcement this week of several cloud services and products shows the progress IBM has made, Staten says.

Staten says IBM seems to have learned from customer engagements, allowing it to create new technologies and repackage others in ways that are appealing to enterprises, rather than only small businesses. IDG analyst Frank Gens adds that IBM's technology can help enterprises standardize services with virtualization and automation, all while offering enterprise-grade security, privacy and availability.

IBM is focusing on development and test environments and virtual desktop management with last week's announcement, saying it will help clients build private clouds behind their firewalls for these purposes. IBM will also host a public cloud service so that enterprises can access test and development environments or virtual desktops from a remote location over a network connection. On the virtual desktop side, IBM partners with vendors such as VMware and Citrix, and adds its own management tools to automate processes, monitor key systems, and deploy security and governance policies.

Although IBM said its public cloud is only in a "preview" mode, it is in use by a number of customers including the Pike County School District in Kentucky, which is accessing virtual desktops from an IBM-hosted data center.

Although several of the announced cloud technologies aren't new, IBM is packaging them in new ways that allow CIOs to deploy services faster and increase levels of automation and efficiency within the data center, analysts say.

For example, IBM's new CloudBurst appliance provides a 42U rack with blade servers; storage; the VMware hypervisor; various software components that help provision new services and manage energy use; and self-service portals for developers. Shipping June 19 at a list price of \$207,000, the product competes against HP's recent BladeSystem Matrix system. ■

Virtualization

continued from page 16

involve the server group, VMware might be a better option.

Analysts say customers could realize price cuts if they added desktop technology from their virtual server vendor. "Definitely, the more customers buy from one vendor, the more discounts they will receive and the lower the cost per seat could be," Forrester's Lambert says.

For John Turner, desktop virtualization isn't the right move yet. The director of networks and systems at Brandeis University in Waltham, Mass., says his group evaluated the possibility of extending their successful server virtualization implementation to the desktop and the argument didn't stand up. For one, being a university it would be a challenge to "lock down" a PC image for the majority of students, faculty and others to use. And without solid support for streaming video across the virtual PCs, Turner says he couldn't sign on just yet.

"From a university perspective, we have such a diversity of functions and we can't dictate too much to the end users. And without gigabit to the desktop, performance would be poor," he explains. "We imagined replacing only computers that fail, stretching the refresh cycle, going back to dumb terminals, but we have to also provide what people want with a powerful operating system."

First American's Seitz agrees that many virtual desktops need to be cloned from one golden image, with some changes applied depending on groups. But the majority of desktops incorporate "Microsoft Office and some basic functionality because that is all they need," he says. While First American uses VMware VDI primarily because it represented "the most cost-effective option," Seitz is also realizing benefits not directly related to costs.

"The number of help desk calls drops substantially because they related to hardware and we threw that out, and business continuity plans are more easily implemented," Seitz says. "Auditors are happier that our data doesn't

leave our data centers and go overseas. The end user on a virtual desktop only sees a representation of the data and not the data itself, which simplifies a lot of what we do."

Don't forget network, storage

IT managers must also look closely at network and storage requirements in their virtual desktop environment because if they don't, what is already an expensive endeavor will become too costly to continue deploying.

"Typically when doing an ROI against desktops, you don't factor in network and storage costs. You need to break that all down in a per-virtual-machine model," Seitz says. "But storage could be a big cost; shared storage is not cheap."

Storage is a lesson already learned by server teams deploying virtualization, says Andi Mann, vice president of research at Enterprise Management Associates. For that reason, desktop groups should depend upon the experience of their peers when considering storage. For instance, 5,000 desktops each with a 60-gigabit drive built-in could prove to be cost exorbitant. But by bringing those storage requirements back to the data center, Mann says, via thin provisioning and data deduplication, desktop teams will lessen their costs and optimize resources.

"Storage management is one of the biggest concerns about desktop virtualization. A lot of resources can be wasted if not managed properly," Mann says.

He adds that the network is another area of concern, though it's not typically on desktop managers' minds. While Gigabit Ethernet is a standard for data centers, it has yet to be widely deployed to the desktop.

Determining network capacity and understanding if an upgrade is in order could help IT managers decide on virtual desktops, Seitz says. "The network needs to be able to handle aggregate traffic from many desktops to one location in the data center, so an upgrade from 100MB Ethernet to Gigabit might be necessary," he says. ■

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Mark Gibbs

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Hello, you've reached customer service. My name is Jeremiah, how are you today?

Oh, hi, yes, I'm fine except my cell phone stopped working!

Thank you for that information sir. Are you calling from your cell phone?

My cell phone? No, I told you, it stopped working, there's no service.

Thank you for that information, sir. What is your number please?

My number! I already entered that already. Twice! Didn't you get it?

No, I am sorry sir, but I didn't get your number. Could you repeat it please?

OK, it's 805-555-1212.

Thank you for that information, sir. Please hold for one or two minutes while I access your account.

[Bad music. Three minutes later.] Thank you for your patience. I have your account in front of me Mrs. Smith and

Excuse me, my name isn't Smith.

Oh, I'm sorry, thank you for that information, sir. Could you give me your number please?

Again?! It's 805-555-1212.

Thank you for that information, sir. Please hold for one or two minutes while I access your account.

[Bad music. Six minutes later.] Hello sir? Thank you for your patience, sir. I see you requested a number transfer.

Yes, that's right, I want my home phone number which is on Vonage to be my cell number.

Thank you for that information, sir. That is being done right now, sir, and should be complete by the 20th.

The 20th? But that's 10 days away! Why is it going to take so long?!

Thank you for your patience sir. The reason is Vonage is a wireline service and it takes longer to transfer than from a cell phone.

But why do I have no cell phone service now? It worked yesterday!

Thank you for that information, sir. Your number, could you repeat it?

FOR GOD'S SAKE! IT IS 805-555-1212. WRITE IT DOWN MAN!

Thank you for that information sir. Please hold for one or two minutes while I access your account.

[Bad music. Nine minutes later.] Thank you for your patience, sir. I see you cancelled your account.

What?! No! I requested a number transfer.

Thank you for that information sir. But you

understand that there will be an early termination fee. It will be on your next bill.

No, no, no! I didn't cancel my account!

According to our records, it says that you cancelled on the first, Mrs. Smith.

I AM NOT MRS SMITH YOU DOLT!

Oh, sorry sir, thank you for that information — could you give me your number again?

Argggggggggggggghhhhhhhh! [Whooshing sound ...]

Sir? Sir? Hummm. [click]

The Centers for Disease Control has reported a wave of what appear to be cases of spontaneous human combustion. Spontaneous human combustion is when a human being bursts into flame leaving behind little more than ashes. Long thought to be an urban myth, the recent rash of cases has given scientists new evidence to examine. A CDC bulletin will be released shortly.

In other news cell phone carriers are reporting an unusually high rate of customers defaulting on their accounts. An industry spokesman said these customers simply stop paying and will not respond to letters or phone calls. The spokesman said that this is thought to be due to the economic downturn.

Flame on to backspin@gibbs.com.



NETBUZZ

News, Insights, oddities

How headline writers create news

You have to hand it to the tabloid headline writers at the *New York Post*: They know nothing if not how to turn the tiniest spark into a five-alarm conflagration.

"Fear grips Google," the *Post* blared on Saturday, June 13.

Why? Well, the introduction of Microsoft's much-ballyhooed search engine, Bing, has Google so gobsmacked as to shake company co-founder Sergey Brin from his slumber to

lead an internal effort aimed at assessing and countering the threat, according to an anonymous Google "insider."

By Sunday — and based on little more than the *Post*'s say-so — a CNET headline asked: "Does Microsoft's Bing have Google running scared?"

See? "Fear grips Google."

And by Monday morning we had a merry band of copycats.

Did you hear me? "FEAR GRIPS GOOGLE!"

But what did the *Post*'s unnamed source actually say? Here's the heart of it: "New search engines have come and gone in the past 10 years, but Bing seems to be of particular interest to Sergey," said one insider, who spoke on the condition of anonymity. The move by Brin is unusual, as it is rare these days for the Google founders to have such hands-on involvement in day-to-day operations at the company, the source added.

So a frontal assault on Google's primary business by the world's largest and most successful software company is "of particular interest to Sergey?" Get out.

And he's not just interested but has rolled up his sleeves?

That's not even news, never mind "Fear grips Google."

A question asked and answered

At the very bottom of a recent column bemoaning the coronation of "Web 2.0" as the 1 millionth "word or phrase" in the English language, I posed this question and comment: "What, no 'tweet'? Shocking."

After all, as cloyingly ubiquitous as Web 2.0 has become, it's a lexicon wannabe when pitted alongside the verb formulation of "to Twitter": namely, tweet. What gives?

Stepping up to offer a probable answer is Buzzblog reader Bruce Burke, who writes in an e-mail: "Tweet got snubbed because it's not a new word like defriended, sexting and N00b."

Doh! The thought had never occurred to me, despite having watched my fair share of Looney Tunes as a kid.

More than the files are corrupted

A college student's 40-page term paper is 20 pages short and due today. Would he pay \$3.95 — plus self-respect — for more time?

The operator of a site called Corrupted-Files.com says he's taking orders daily: \$3.95 gets you a corrupted Word, Excel or PowerPoint file. The owner then submits it in the hope that the professor won't discover "the problem" for a few days, by which time the real paper should be done.

While not exactly the Oprah seal of approval, Corrupted-Files.com was recently featured on the New York Times Web site, making its homepage plea to "Keep this site a secret" more meaningless than cheeky. Moreover, the site is already on the radar of academia as yet another easy way out for the less-than-diligent crowd.

I sent the operator of Corrupted-Files.com a number of questions both via e-mail and the site's Web form.

I didn't get a reply ... not even a corrupted one.

Confessions and comments to buzz@nww.com.

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